THE INVENTION CLAIMED IS:

1. A method of preventing or treating at least one syndrome related to defective glucose metabolism in humans or other mammals in need thereof, comprising administering to the mammal or human a therapeutically effective amount of a combination of cofactors comprising thioctic acid, niacinamide, pantothenate, riboflavin and thiamine.

2. The method of claim 1, wherein the combination of cofactors comprises about 25 to 85 weight % thioctic acid, between about 5 to 25 weight % niacinamide, between about 5 to 25 weight % pantothenate, between about 0.5 to 10 weight % riboflavin and between about 0.5 to 10 weight % thiamine.

3. The method of claim 1, wherein the combination of cofactors comprises about 68 weight % of thioctic acid, about 13.5 weight % of niacinamide, about 13.5 weight % of calcium pantothenate, about 2.5 weight % of riboflavin and about 2.5 weight % of thiamine.

4. The method of claim 1, wherein the therapeutically effective dosage amount of the combination of cofactors administered to human or other mammals ranges from between about 0.2 to 5 mg/kg body weight daily.

5. The method of claim 1, wherein the at least one syndrome to be treated is selected from the group consisting of neuropathy; spontaneous muscle cramps, such as nocturnal muscle cramps associated with neuropathy; spinal motor neuropathies; seizuring, such as spontaneous epileptiform seizuring; diabetes mellitus; pediatric hypoglycemia; myopathy; muscle weakness; muscle soreness associated with exercise; muscle spasms; somnolence; memory deficit; reduced mental acuity; exercise intolerance and myocardial insufficiency.

6. The method of claim 1, wherein the mammals are selected from the group consisting of domesticated dogs, cats and cattle.

7. The method of claim 1, wherein the defective glucose metabolism includes defective pyruvate dehydrogenase complex activity and α-ketogluterate dehydrogenase complex activity.

8. The method of claim 1, wherein the route of administration of the preparation to the human or other mammal is via oral or parenteral administration.

9. The method of claim 8, wherein the oral administration is selected from the group consisting of hard or soft shell gelatin capsules, tablets, sachets, lozenges, elixirs, suspensions, syrups, powders, granules, solutions or suspensions in aqueous liquid or non-aqueous liquid and oil-in-water or water-in-oil emulsion.

10. The method of claim 9, wherein the powder or granules is added to food.

11. The method of claim 9, wherein the powder or granules are mixed with dietary constituents, such as energy snacks for humans or pet treats.

12. A method as recited in claim 8, wherein the parenteral administration is selected from the group consisting of intravenous, subcutaneous and intramuscular.

13. The method of claim 1, wherein the combination of cofactors includes additives selected from the group consisting of preservatives, stabilizing agents, anti-caking agents, coloring agents, flavoring agents and combinations thereof.

14. A pharmacological composition for preventing or treating at least one syndrome related to defective glucose metabolism in humans or mammals in need thereof, comprising a carrier and the combination of cofactors as recited in claim 1.